

## Claims:

1. A tag embedded with data, the tag comprising dots, each dot having a position, the tag conforming to a tag format structure, wherein:  
5 the tag format structure contains a plurality of entries, there being an entry associated with each dot's position;  
each entry specifying whether the associated dot is data or not.
2. The tag of claim 1, wherein:  
10 each entry of the tag format structure comprises bits including a low order bit and the entry is interpreted according to the low order bit.
3. The tag of claim 2, wherein:  
the low order bit determines if the entry is interpreted as data or not.  
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4. The tag of claim 3, wherein:  
the low order bit indicates that the entry is data and a remainder of the bits of the entry is interpreted as an address.
- 20 5. The tag of claim 1, wherein:  
each entry is interpretable independently without reliance on state information.
6. The tag of claim 1, wherein:  
the tag format structure is comprised of one or more lines;  
25 the tag is scaled by a factor of N by scaling the number of entries in the tag format structure;  
the scaling of the tag format structure being a replication of each entry N times and a replication of each line N times.
7. The tag of claim 1, wherein:  
30 each dot is a macrodot generated from the tag format structure.
8. The tag of claim 1, wherein:  
dot positions have a relationship and the relationship takes into account a redundancy encoding of the data.  
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9. The tag of claim 1, wherein:

the tag is produced using a tag encoder in which the tag format structure is implemented, the encoder encoding fixed data together with tag specific data into the tag.

10. The tag of claim 9, wherein:  
5 the tag is printed with an infrared absorptive ink that can be read with a tag sensing device.

11. The tag of claim 9, wherein:  
the tag encoder merges encoded tag data with a basic tag structure and places dots in an output FIFO  
in a correct order for subsequent printing.

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12. The tag of claim 11, wherein:  
the encoded tag data is generated from the original data bits on-the-fly to minimize buffer space.

13. The tag of claim 1, wherein:  
15 dots may be located in a data area or located in an arbitrarily shaped constant background pattern.

14. The tag of claim 13, wherein:  
the background pattern further comprises a locator component.

- 20 15. The tag of claim 14, wherein:  
the locator component is circular.

16. The tag of claim 9, wherein:  
the encoding further comprises double indirection encoding.

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17. The tag of claim 1, wherein:  
the dots are printed as continuous tone dots.

18. The tag of claim 1, wherein:  
30 each entry of the tag format structure comprises a selected and the entry is interpreted according to the selected bit.

19. The tag of claim 18, wherein:  
the selected bit determines if the entry is interpreted as data or not.

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20. The tag of claim 19, wherein:

the selected bit indicates that the entry is data and a remainder of the bits of the entry is interpreted as an address.